

A NEW STATUS FOR *QUERCUS SHUMARDII*
VAR. *ACERIFOLIA* (FAGACEAE)

NICK STOYNOFF

Glenbard East High School
Lombard, IL 60148, U.S.A.

WILLIAM J. HESS

The Morton Arboretum
Lisle, IL 60532, U.S.A.

ABSTRACT

Quercus shumardii Buckl. var. *acerifolia* Palmer is elevated to species *Q. acerifolia*. It is restricted to the north-facing bluffs of Magazine Mountain, Logan County, Arkansas. A comparison of certain morphological features with *Q. shumardii sensu lato* is made.

Quercus shumardii Buckl. var. *acerifolia* Palmer (Maple-leaf Oak) was described in 1927 from specimens that E. J. Palmer collected in 1923 from Magazine Mountain, Arkansas. In the interim, no additional localities for this taxon have been discovered. It was included in the Report on Endangered and Threatened Plant Species of the United States (United States Fish and Wildlife Service 1975) in the category of Threatened species, and more recently in Category 2 (possible listing may be appropriate, but sufficient data not available to support listing now) of the Federal Register of Endangered and Threatened Wildlife and Plants (1985) by the United States Fish and Wildlife Service.

The single known locality for the Maple-leaf Oak occurs on land within the Ozark National Forest. The Ozark National Forest has issued a special use permit to Arkansas Department of Parks and Tourism for development of a state park on Magazine Mountain. Ownership of the land in the eventuality of park development will remain with the United States Forest Service. An Environmental Impact Study (EIS) to determine the feasibility of park development has been initiated and will be completed in 1991. Significant elements of flora and fauna on the mountain will be important factors in the selection of alternatives for park development in the EIS.

Quercus shumardii var. *acerifolia* is clearly related to typical *Q. shumardii*. *Quercus shumardii sensu lato* has also included other varieties such as *schneckii* (Britt.) Sarg. and *texana* Buckley *sensu* Trelease (= *Q. buckleyi* Nixon and Dorr). We have visited the type locality for var. *schneckii* along the bottomland of the Wabash River in Illinois. The key morphological feature

separating var. *shumardii* from var. *schnneckii* is the shape of the acorn cupule (saucer-shape = var. *shumardii*; turbinate = var. *schnneckii*). Trees with both types of acorn cupules occur at this locality. At this time, because the key morphological characteristic separating the two varieties and bottomland habitat (= var. *shumardii*) versus upland habitat (= var. *schnneckii*) do not hold up, we do not recognize a distinction between these two taxa. Two other taxa, *Q. texana sensu* Dorr and Nixon (1985) (= *Q. nuttallii* Palmer) and possibly *Q. georgiana* M.A. Curtis make a part of the *Q. shumardii* complex. It is not the purpose of this paper to address the relationships of these taxa, although we are studying them for a later report.

Stoyhoff and Hess have accumulated data to warrant raising *Quercus shumardii* var. *acerifolia* to species status. Petzold and Kirchner (1864) were the first to use *Q. acerifolia*, but as a synonym of *Q. rubra* and without a description. Consequently, it was not a valid publication and *Q. acerifolia* is not a later homonym and available for the oak from Magazine Mountain. We are still in the process of gathering and analyzing data (especially from seedling stock), which will form the basis of comparative studies. Because of the impending EIS reviews, we believe it is important to propose the change in status now, rather than waiting for full confirmation. This may well be the most rare species of oak known and deserves very special preservation efforts and status.

QUERCUS ACERIFOLIA (Palmer) Stoyhoff & Hess, stat. nov. — **BASENYM:** *Quercus shumardii* Buckl. var. *acerifolia* Palmer, J. Arnold Arbor. 8:24–55. 1927, non *Quercus acerifolia* Petzold & Kirchner, nom. nud. Arbor. Muscov. p. 656. 1864. **TYPE:** UNITED STATES. ARKANSAS: Logan Co.: rocky (sandstone) top of Magazine Mountain, 8 Oct 1924, Palmer 26434 (ISOTYPE: AA, MOR!).

Table 1 is a comparison of certain morphological features of *Quercus acerifolia* with its closest relative *Q. shumardii*. Maple-leaf Oak is a shrub or small tree to five (occasionally to 15) m tall. Typically, several ascending stems originate near the base at or below ground level. The leaves are broader than long and quite distinct from typical *Q. shumardii* leaves, which are longer than broad (Fig. 1). It has acorns (nuts only) that rarely are more than 17 mm long, 1/4 to 1/3 smaller than those of *Q. shumardii* (Fig. 2).

Quercus acerifolia grows on the north-facing bluffs of Magazine Mountain at an elevation of 2600 feet. There are two populations, one at Brown Spring and the other between 1.3 and 2.0 km west along the cliffs. They occur

FIG. 1. Leaf outlines of *Quercus acerifolia* and *Q. shumardii*. A–E. *Q. acerifolia* by Hess and Stoyhoff from Magazine Mountain, Logan County, Arkansas. F–J. *Q. shumardii*. F Clay Co., Illinois, Hess and Stoyhoff 6433. G. Perry Co., Tennessee, Hess and Stoyhoff 6500. H. Shenandoah Co., Virginia, Hess 6514. I. Union Co., Illinois, Hess and Stoyhoff 6436. J. Izard Co., Arkansas, Hess and Stoyhoff 6440.

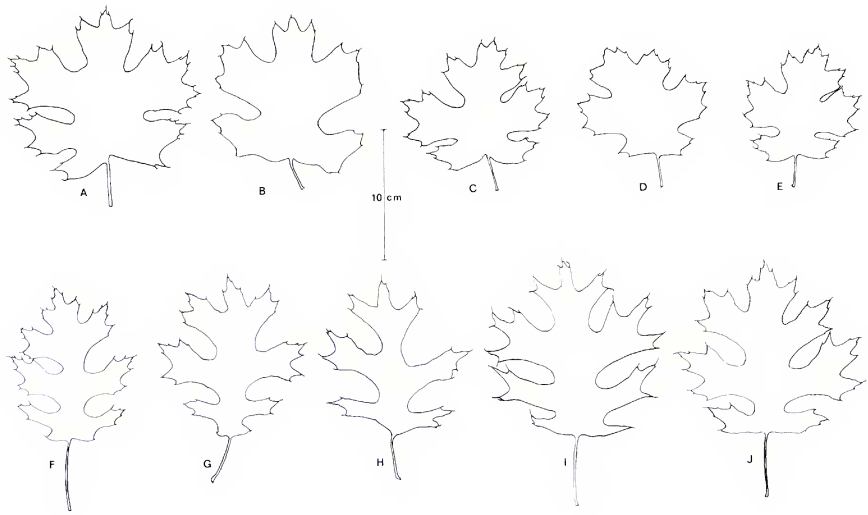


TABLE 1. Comparisons of certain morphological features of the *Quercus shumardii* complex.

Feature	<i>Q. acerifolia</i>	<i>Q. shumardii</i>
Habit	Shrub or small tree, 3-6 (-15) m tall, multiple stems	Tree, 15-30 (-40) m tall, single stem
Branch (yr 1)		
color	Brown	Brown
pubescence	Stellate, glabrescent	Stellate, glabrescent
Leaf		
habit	Wider than long	Longer than wide
length	7-14 cm	8-17 (-20) cm
width	8-15 (-18.5) cm	6-15 (-16) cm
length/width \bar{x}	0.81 ($n = 39$)	1.22 ($n = 83$)
# lobes	5 (-7)	5-7 (-9)
Bud		
color	Apex dark brown, lower scales tan, hyaline margins	Apex brown, lower scales tan, hyaline margins
pubescence	Glabrous	Glabrous
Acorn		
cupule		
depth	(2-) 3-5 (-6) mm	(4-) 6-12 mm
width	(12.4-) 14-17 (-18) mm	(16.5-) 18-26 (-28) mm
nut		
length	13-17 (-17.5) mm	(16-) 18-26 (-29) mm
Distribution	Logan Co., AR	US from PA s to FL, w to TX, OK, and KS.

mostly within 75 m of the 65 m high bluffs on level ground or, more commonly, on gentle slopes (in what would have been a savannah-like zone) and along the rocky rim.

ACKNOWLEDGEMENTS

We wish to thank Marion T. Hall for his critical review of this manuscript and support of this study. Richard Jensen, Kevin Nixon, and Gary Tucker made several suggestions and improvements to the early drafts and we are indebted to them. We are indebted to Paul Manos for providing us with a photocopy from the library at the Bailey Hortorium, Cornell University, of the reference by Petzold and Kirchner. Nancy Hart-Stieber, staff artist at the Morton Arboretum, consulted on the illustrations and Elaine Fairbanks drew the leaf and acorn outlines. We thank the United States Fish and Wildlife Service for partial support of the field work under a Cooperative Agreement No. 14-16-004-89-940.

REFERENCES

- DORR, L. J. and K. C. NIXON. 1985. Typification of the oak (*Quercus*) taxa described by S. B. Buckley (1809-1884). *Taxon* 34:211-228.
- PALMER, E. J. 1927. On Nuttall's trail through Arkansas. *J. Arnold Arbor.* 8:24-55.

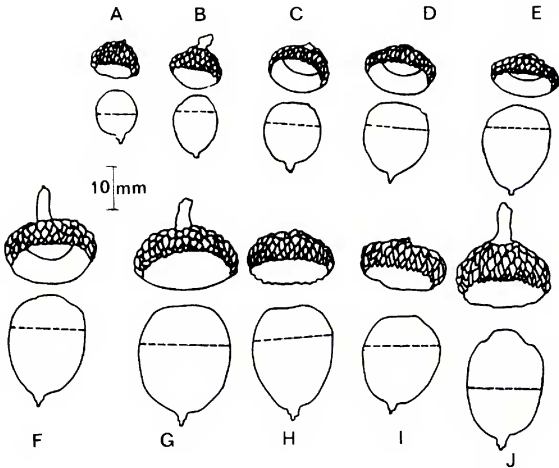


FIG. 2. Acorn nut and cupule outlines of *Quercus acerifolia* and *Q. shumardii*. A-E, *Q. acerifolia* collected by van der Linden and Hess from Logan Co., Arkansas. F-J, *Q. shumardii*. F-G, Beall Woods, Wabash Co., Illinois, Hess and Stoyoff 6503. H, Clay Co., Illinois, Hess and Stoyoff s.n. I, Shenandoah Co., Virginia, Hess 6514. J, Mississippi Co., Missouri, Hess and Stoyoff 6509.

PETZOLD, E. C. and G. KIRCHNER. 1864. Arb. Muscov. 830 pp.

UNITED STATES FISH AND WILDLIFE SERVICE. 1975. Federal register of threatened or endangered fauna or flora; review of status of vascular plants and determination of "critical habitat". Vol. 40. No. 127.

_____. 1985. Federal register of endangered and threatened wildlife and plants; review of plant taxa for listing as endangered or threatened species. Part IV. Vol. 50. No. 188.